

IOWA energy BULLETIN

Department of Natural Resources
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Expanding the Renewable Energy Mix:



What's the Best Approach?

The Iowa Department of Natural Resources has asked eight representatives of energy-related organizations to offer their perspectives on renewable energy development in Iowa. The representatives (featured here in alphabetical order) come from

state agencies, utility associations, research centers and environmental groups. Each was asked two questions: 1) Does your organization believe renewable energy development is good for Iowa and why?, and 2) What strategies or policies do you consider the best

alternatives for expanding renewable energy in the state? The answers given by our participants demonstrate the diverse opportunities for renewable energy's expanded role in Iowa's energy mix.

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Expanding the Renewable Energy Mix:



Roger Arthur,
Board Member,
Iowa Rural Electric
Cooperatives and
President,
Allamakee-
Clayton Rural
Electric Coopera-
tive in Postville, IA

1) Does your organization believe renewable energy development is good for Iowa and why?

Iowa Electric Co-ops support the use and development of these technologies. The membership realizes electricity generation has environmental impacts. We are investing in the development of new technologies to keep the environment clean, safe and sustainable for future generations. Currently in Iowa, almost all electric co-ops use hydropower and have added wind energy to diversify their portfolios. Many co-ops are exploring options such as biomass, fuel cells, methane production and others.

2) What strategies or policies do you consider the best alternatives for expanding renewable energy in the state?

Iowa Electric Co-ops believe energy and environmental policies must balance the needs of individuals, the environment and the communities we serve. We cannot rely on a single energy source, but must combine traditional sources such as coal with renewable sources like wind. We need an economic balance that is reliable. Tradable tax

credits or incentives are great while keeping it affordable for our customers. Electric co-ops are not-for-profit, but we still pay taxes. Any money we generate goes to capital expenses or is given back to member owners. Tax credits are important because we could become more aggressive in trying to develop renewable energy sources. People should know that on January 1, 2004, all Iowa utilities will offer some type of a green pricing program to their customers.



Floyd Barwig,
Director, Iowa
Energy Center

1) Does your organization believe renewable energy development is good for Iowa and why?

We believe appropriate development of Iowa's renewable resources is potentially very good for Iowa, both from economic and environmental points of view. Most renewable energy sources offer an environmental advantage over the use of conventional fossil fuels. If the projects are done properly, and are locally owned and operated, they offer economic development in Iowa. Farmers who are paid for wind turbines, or co-ops that erect turbines and use biomass-based systems, can take the resources at hand and put them to use to expand Iowa's economy, particularly in rural areas.

2) What strategies or policies do you consider the best alternatives for expanding renewable energy in the state?

I need to preface my answer by saying the energy center is not a policy organization. We are devoted to research, demonstration and education. My belief is that Iowa



needs to develop a robust portfolio of technologies to make use of the resources we have at hand. A clear example would be in the area of bio-renewables. There are multiple ways to make things from biomass. We need to develop a whole series of technologies and make them available to the business people of Iowa who will bring their understanding of logistics and economics to make business sense.



**Patti Cale-
Finnegan, Energy
Services
Coordinator,
Iowa Association
of Municipal
Utilities**

1) Does your organization believe renewable energy development is good for Iowa and why?

Our organization represents 550 cities in Iowa. Our mission has always been to help member utilities implement renewable energy projects wherever they make sense. Our first municipal utility to develop wind energy was Waverly Light and Power. Since then, we



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have helped a group of seven utilities develop a municipally owned wind farm. We have had three municipal communities receive economic development grants for wind energy, which are the first of their kind in the state of Iowa. We also are helping our members comply with the Alternative Energy mandate. Our record shows that we are very committed to renewable energy development where it makes sense for our member utilities.

2) What strategies or policies do you consider the best alternatives for expanding renewable energy in the state?

Our utilities have never been mandated to do renewable energy projects. Everything we have done has been on a volunteer basis. We have implemented projects because our customers have asked for it, we want to diversify our energy portfolios, and the economics were sound. The seven-utility wind project is a good example of how volunteer investments in economically sound projects provide valuable and cost-effective utilities for customers. Our state has been a leader in renewable energy. Iowa needs to look for ways to maximize resources to provide economically sound and cost effective energy.



**Del Christensen,
President, Iowa
Renewable
Energy
Association**

1) Does your organization believe renewable energy development is good for Iowa and why?

Renewable energy development is vital for Iowa because it helps bring more businesses to the state. It also reduces the amount of fossil fuel

consumption in Iowa, while giving energy consumers more options and the ability to choose cleaner energy.



2) What strategies or policies do you consider the best alternatives for expanding renewable energy in the state?

I think a renewable energy portfolio standard is an important policy to have in place. There has been a lot of argument against it, but it is needed to give utility companies and others a nudge to make conversions over to renewable energy development and production. There also needs to be incentives that allow not only the larger corporations, but also individual farmers and landowners to establish renewable energy production within the state. For example, individual landowners might be given tax breaks as incentives, allowing them to set up wind turbines or solar panels. It is so important that, as we move toward renewable energy, we move toward sustainability. We need both individuals and corporations to move toward sustainable renewable energy supplies.



**Jack Clark,
Vice President,
Iowa Utility
Association**

1) Does your organization believe renewable energy development is

good for Iowa and why?

Iowa's investor-owned energy companies have demonstrated a strong commitment to renewable energy in Iowa. As Iowa's largest providers of electric and natural gas energy, it is important that they first position the state for a safe, reliable and environmentally sound energy future. The IOUs are adding important baseload power plants making strides in wind energy and biomass, and actively increasing energy efficiency initiatives.

2) What strategies or policies do you consider the best alternatives for expanding renewable energy in the state?

Iowa's current strategies and policies have done a remarkable job of expanding renewable energy. We are, in fact, looked upon as a national leader in development. Governor Vilsack is a tremendous renewable energy supporter and has been providing leadership in gaining the cooperation of all involved parties. Soon, all utilities will offer customers green marketing programs. The policies we currently have, combined with market driven demand, should continue to drive investments in renewable energy.

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**Michelle Kenyon Brown,
Iowa Citizen Action Network
(ICAN) Energy Organizer**

1) Does your organization believe

renewable energy development is good for Iowa and why?

We believe the state needs to develop more renewable energy resources. By getting more energy from homegrown renewable sources, we keep energy dollars in state, create new high-tech jobs, provide extra income for farms, and increase our tax base. Renewable energy reduces Iowa's and the nation's reliance on imported fuels. By having a more diverse renewable energy base, we reduce our exposure to fossil fuel price fluctuations. Renewable energy means cleaner air and water for Iowa and that means healthier Iowans.

2) What strategies or policies do you consider the best alternatives for expanding renewable energy in the state?

ICAN believes all Iowa utilities should produce or purchase 10 percent of their energy from renewable energy sources by 2010. This requirement is the only effective way to increase the amount of renewable energy consumed. Currently we export renewable energy because of other state's renewable energy purchase requirements. Establishing a 10 percent standard would encourage competition by creating a market here in Iowa. Right now, fossil fuels have the competitive advantage because of an existing infrastructure that supports their energy consumption. Renewable energy does not have these benefits, but a standard will help create an industry. We also believe the state of Iowa should require all state agencies to purchase 10 percent of their power from renewable energy sources by 2010. This goal can be easily exceeded.



**Diane Munns,
Chairperson, Iowa Utilities Board**

1) Does your organization believe renewable energy development is good for Iowa and why?

Renewable energy is part of a total generation portfolio that ensures reliability and reasonable rates for Iowa customers. As a board, we do not take advocacy positions because we have to judge all proposals that come before us in an unbiased manner. Ultimately, customers pay for renewable energy technologies. The Board has to balance the role of renewable energy in the generation portfolio with the need for reasonable customer rates.

2) What strategies or policies do you consider the best alternatives for expanding renewable energy in the state?

Generally, Board policies and strategies for promoting renewable energy are established by the Iowa legislature. The Board promotes renewable energy within the context of its overall responsibilities. If you look at the statistics, Iowa ranks third nationally in wind generation. This is based on mandates and incentives set by the legislature and Iowa's great wind resources. We will need to look at ways to make adequate transmission available for moving more wind power out of the region. Minnesota and the Dakotas are looking at this as well, so this is a regional issue. Overall, the Board has a general policy of encouraging the development of alternative energy. For example, the Board oversees green pricing of Iowa utilities as authorized by the legislature. These programs are voluntary to customers who wish to contribute to the development of renewable energy. The Board also assists the Iowa Energy Center in collecting funds for its alternate energy revolving loan program.



**John Perkins,
Consumer Advocate, Iowa Consumer Advocates Office**

1) Does your organization believe

renewable energy development is good for Iowa and why?

We support renewable energy development because it generates a supply without worrying about depletion. Renewables are more environmentally friendly, and they often provide economic development opportunities. Wind power, for example, provides farmers income from the placement of turbines on their property. To counter balance, when looking at renewable portfolio standards as part of an overall package, there is a higher cost to people from increased electric rates. We have to be careful that we do not defeat economic development by having rates that are too high through added expenses from using renewables.

2) What strategies or policies do you consider the best alternatives for expanding renewable energy in the state?

Mandating utilities is the ultimate tool in expanding renewable energy because it forces more use of renewables. There is a requirement now that each utility offer green power to their customers, whether purchased from out of state or developed themselves. However, utilities have told us in their customer surveys, only 1 to 2 percent of people are willing to pay extra money for renewable energy. Consumer education is extremely important given the results of these surveys. The public needs to be educated on non-monetary benefits of moving toward renewables. Also, the biggest drawback of wind or solar is that neither one can be used on demand. The technology has to progress even further to make renewables more effective.



A Clean Sweep:

Cedar Rapids Landfill Uses Methane for Soil Clean-Up

Like many large landfills across the country, Bluestem Solid Waste Agency, Cedar Rapids, has been capturing methane gas as a renewable energy resource for years. Now the solid waste agency has found an innovative new purpose for landfill gas through environmental remediation.

Bluestem's Landfill Gas History

By law, landfills are required to test for hazardous gases when their capacity reaches a certain level. They may then be required to collect and manage landfill gas if gas production exceeds regulatory levels. Currently three landfills in Iowa manage methane waste production – Bluestem Solid Waste Agency, Metro Waste Authority in Des Moines and Scott County Sanitary Landfill.

Bluestem's main landfill has been capturing methane gas since 1995. In a partnership with Alliant Energy, the landfill pipes the methane to the utility's substation, where the gas is converted into electricity.

"It is necessary for this landfill to collect the methane because of how close we are to a residential area," said Karmin Bradbury, executive director of Bluestem Solid Waste Agency. "There used to be a threat of gas migration into the sewer system, along with pollution concerns. This has been an environmentally responsible method for us to manage methane."

Methane for Environmental Remediation

Bluestem also employs landfill gas on-site for environmental remediation. Dustcoating, Inc. (DCI) of Minnesota uses the gas to thermally

treat soils contaminated with petroleum and coal tar through a mobile thermal desorption unit.

The remediation process applies intense heat from landfill gas combustion to clean contaminated soil. The decontaminated soil is then applied as cover material in the landfill or returned to its original location.

One of the hurdles to installing a methane recovery system can be the cost, but for Bluestem, the benefits have far outweighed the price.

"This was seen as a long-term investment for us with a greater payback further out in the process," said Bradbury. "One of the advantages of this system is that we have been able to increase our landfill capacity from the waste settlement caused by capturing the gas."

Safety concerns also have been minimized through the installation of the system. Potential on-site problems exist at any landfill because of the combustibility of methane. The system has allowed Bluestem to mitigate some of these problems. Additionally, the landfill has a plan in place in case of an emergency.

Methane can be captured at the landfill for 15 to 17 more years, according to Bradbury, even though the landfill is due to close in the next few years since it is near capacity.

"The methane will still be generated after the landfill closes and we plan to keep recovering it," said Bradbury.

Methane recovery and environmental remediation have proven successful for Bluestem.



Landfill gas being captured at Bluestem's landfill.

"Bluestem has and will continue to use landfill gas as a resource, thereby improving the environmental performance of the landfill," said Jeff Myrom, executive officer with the DNR's Energy and Waste Management Bureau.

For more information, contact Bluestem Solid Waste Agency at the e-mail address: bluestem@bluestem.org

The Science Behind Landfill Gas

As organic materials deposited in a landfill decompose, landfill gas is produced.

Landfill gas consists of about 50 percent methane—the primary component of natural gas—about 50 percent carbon dioxide, and a small amount of non-methane organic compounds.

Each pound of organic waste generates two to six cubic feet of landfill gas as it degrades, which can take as long as 30 years.

Technology Tracker: Distributed Generation

Distributed generation is the use of small-scale power generation technology located close to the load being served.

Any type of electric generation facility can be installed for distributed generation, with sizes ranging from 1 kW to more than 5 MW. Some examples include diesel engines, combined heat and power (when heat produced from electricity generation is captured as an energy source), fuel cells, photovoltaic systems, wind turbines and others.

Benefits and Opportunities:

Distributed generation is growing in popularity because facilities can decrease their reliance on the traditional utility grid. The interest in off-grid electricity production may include a need for:

- ◆ **Improved reliability and quality of electric power.** On-site generation can improve both power quality and reliability, especially when backed by grid-based power. Grocery stores and financial institutions have relied on distributed generation for years because of their need for continuous electricity. Also, concerns about an aging national transmission system are evoking increased interest in distributed generation.

- ◆ **Standby/emergency power.** Hospital and airports are required by law to install and maintain distributed generation units.

- ◆ **Remote power.** Rural residences and commercial applications may opt for distributed generation to avoid expensive transmission hook-up costs with the grid because of their remote locations.

- ◆ **Peak shaving.** Facilities with high utility demand are avoiding peak energy costs by supplementing electricity use with electricity from their own power source.



Learn More

www.distributed-generation.com

www.nrel.gov

- ◆ **Selling power back to the grid.** Depending on state regulations and utility arrangements, some customers are able to sell excess power back to the utility through net metering, an option that makes renewable energy technologies more attractive.

- ◆ **Reduced pollution and green power.** Some facilities are pursuing renewable energy and fuel cell technologies for distributed generation because they lessen environmental impacts.

Drawbacks and Barriers:

- ◆ **Expense.** Unless a facility has special circumstances or interests, distributed generation can be a costly alternative compared to traditional electricity purchased through a utility. The costs and benefits need to be weighed for a specific facility.

- ◆ **Interconnection.** Distributed generation usually is most effective if it is backed by grid power. However, connecting to the grid can cause safety, control and cost issues for the facility that should be discussed with the utility.

- ◆ **Grid Effects.** The effect of numerous facilities going on and off the grid based on power needs could place an unplanned burden on the traditional transmission system, especially during high peak demand times.

- ◆ **Lack of Standards.** The diversity of energy installations and regulations for distributed generation limit a true understanding of the costs and impacts of off-line energy production. Some states, such as California, have developed distributed generation guidelines to help regulate and direct the emerging industry.

Green Power Requirement Takes Effect January 1, 2004

Beginning January 1, 2004, all electric utilities operating in Iowa, including those not rate-regulated by the Iowa Utilities Board, are required to offer green power options to their customers.

The resulting green power programs will allow customers to make contributions to support the development of renewable energy sources in Iowa. Utilities can offer their customers the option of actually purchasing electricity from a renewable energy source, or the utility program may support renewable energy development in another way, such as by financing research activities.

Electric utilities are required to notify their customers of their alternate energy purchase program at least 60 days prior to implementation of the program. This means that all electric utility customers should have received information about their utility's program by early November.

For more information about the green power requirement, contact John Pearce at the Iowa Utilities Board at (515) 281-5679; e-mail:

John.Pearce@iub.state.ia.us

DNR Corner

Displays at Three Iowa Educational Centers Showcase Photovoltaics

Three Iowa educational facilities now feature permanent displays showcasing the benefits, history and technology behind photovoltaic systems.

Muscatine High School, Indian Creek Nature Center, Cedar Rapids, and Prairiewoods Franciscan Spirituality Center, Hiawatha, all rely on photovoltaic systems for part of their electricity production. With funding and production assistance from the Iowa DNR, they each constructed displays on their properties to help educate visitors.

The three-dimensional displays are constructed of eight-foot panels and feature an electronic sign powered by a photovol-

taic panel. Construction was completed in October.

The display can be seen by visiting each of the facilities. For more information, contact Jennifer Moehlmann with the DNR at, (515) 281-8518.



The new PV display at Muscatine High School.

Pollution Prevention Internship and Company Deadline January 31, 2004

Iowa college students and industries are invited to apply for the 2004 Pollution Prevention (P2) Intern Program. The nationally award-winning program places college graduate level and undergraduate students in industries to help companies identify, evaluate, and implement P2 projects.

The objectives of the program are to provide participating companies with well-

developed options for reducing waste and saving money; keep qualified college graduates in Iowa; and offer students hands-on experience reducing waste in an industrial setting. Participating companies have included Tone's Brothers, Inc., Pepsi Co., General Electric, Rockwell Collins, and dozens more.

For more information and to obtain an application, contact program coordinator Jan Loyson at (515) 281-3142.

DNR Receives \$320,000 in Federal Grants for Energy Programs

The U.S. Department of Energy has awarded the Iowa DNR \$320,000 in grants for four projects that will advance energy efficiency and renewable energy development in Iowa.

Iowa received grants for the following programs:

- ◆ \$66,000 to develop an educational package on building energy codes and standards for local governments.

- ◆ \$94,000 to educate Iowa industries and energy professionals about the energy

efficiency benefits of high temperature superconductivity in transmission lines.

- ◆ \$100,000 to the Industries of the Future program with a focus on water and wastewater use in industrial settings.

- ◆ \$100,000 for the Rebuild Iowa programs, helping communities improve energy efficiency.

For more information, contact Lori McDaniel with the DNR at (515) 281-8094.

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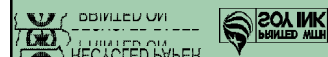
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Angela Chen, Waste and Energy Alternatives Section
Jane Mild, Solid Waste Planning and Permitting Section
Monica Stone, Financial and Business Assistance Section
Julia C. Tack, Editor



Programs and activities are available to all potential clientele without regard to race, color, national origin, sex, handicap or age. Anyone who feels that he or she has been discriminated against should send a complaint within 180 days to the Iowa Civil Rights Commission, 211 E. Maple, 2nd Floor, Des Moines, IA 50319.

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For additional copies or to comment, please write or call: Editor, Iowa Energy Bulletin, Wallace Building, Des Moines, Iowa 50319-0034, (515) 281-8665, (515) 281-6794 (fax), E-Mail: Julie.Tack@dnr.state.ia.us



Calendar of Events

January 14, 2004. Ankeny, IA. *Energy Management Matters for Business.* Scott Bowman, KJWW Engineering, will cover the design, operation and maintenance of energy management control systems. Sponsored by the Iowa Energy Center, the Iowa Association for Energy Efficiency and the Iowa Association of Municipal Utilities. For more information contact Patti Cale-Finnegan at: pcale@iamu.org

February 4. Des Moines, IA. *Momentum is Building.* Electrical, building and HVAC professionals conference sponsored by Iowa's Electric Cooperatives and the Iowa Energy Center. For more information go to the Web site: www.momentumisbuilding.com

February 16-18. Miami Beach, FL. *Ninth Annual National Ethanol Conference: Policy & Marketing.* Sponsored by the Renewable Fuels Association. For conference information, go to the Web site: www.ethanolrfa.org/nec.shtml

March 28-31. Chicago, IL. *Global Windpower 2004 Conference and Exhibition.* Sponsored by the American Wind Association. Offering educational and technical opportunities for the wind energy industry. For conference information, go to the Web site: www.awea.org/global04.html

April 17. Select locations nationwide. *Solar Photovoltaic Certification Exam.* Offered by the North American Board of Certified Energy Practitioners, this certification process helps create a set of national standards distinguishing PV installers in their field. For certification information, go to the Web site: www.nabcep.org and click on the heading for "PV Installer Certification."

IOWA DEPARTMENT OF NATURAL RESOURCES
Wallace State Office Building
Des Moines, IA 50319-0034

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